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(54) Abstract Title
Transporting a product

(57) A method, a transportation device and a paper converting machine for transporting a product 3 from a remote place to a converting machine 4 by using a part of the converting machine 4 as the transportation device. This simplifies the handling of the product for conversion, prevents the product from becoming damaged and, ultimately, reduces costs.

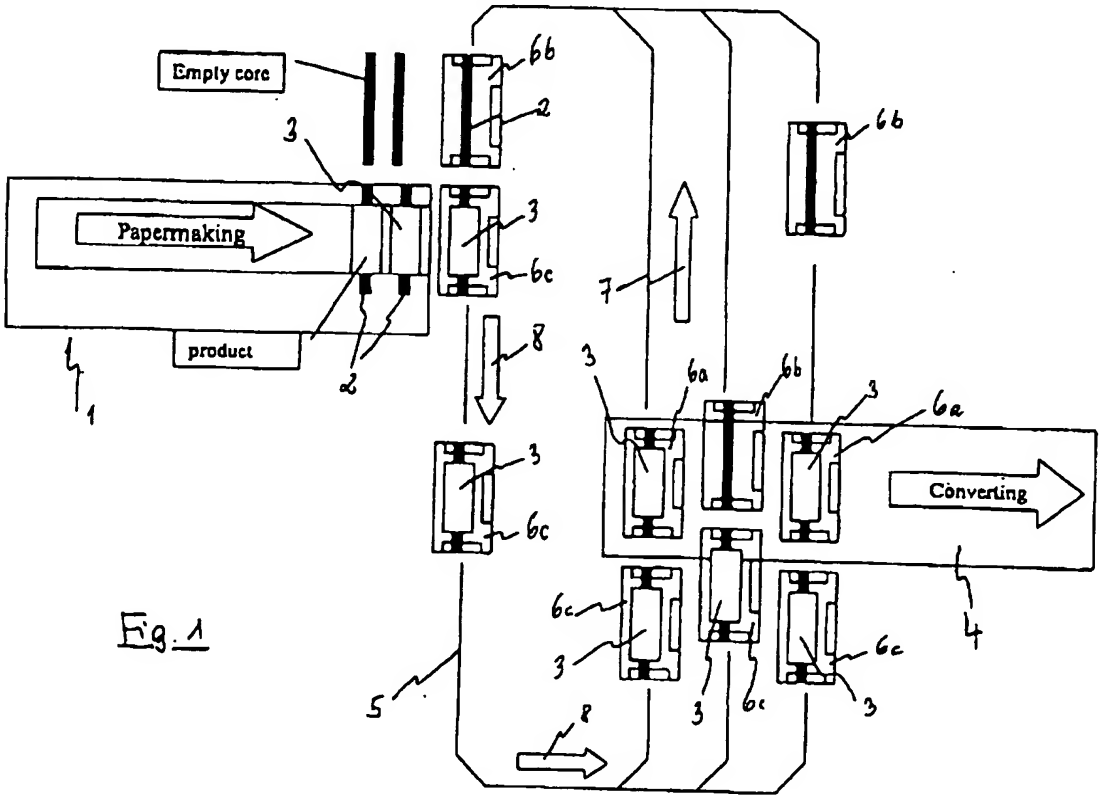

Fig. 1

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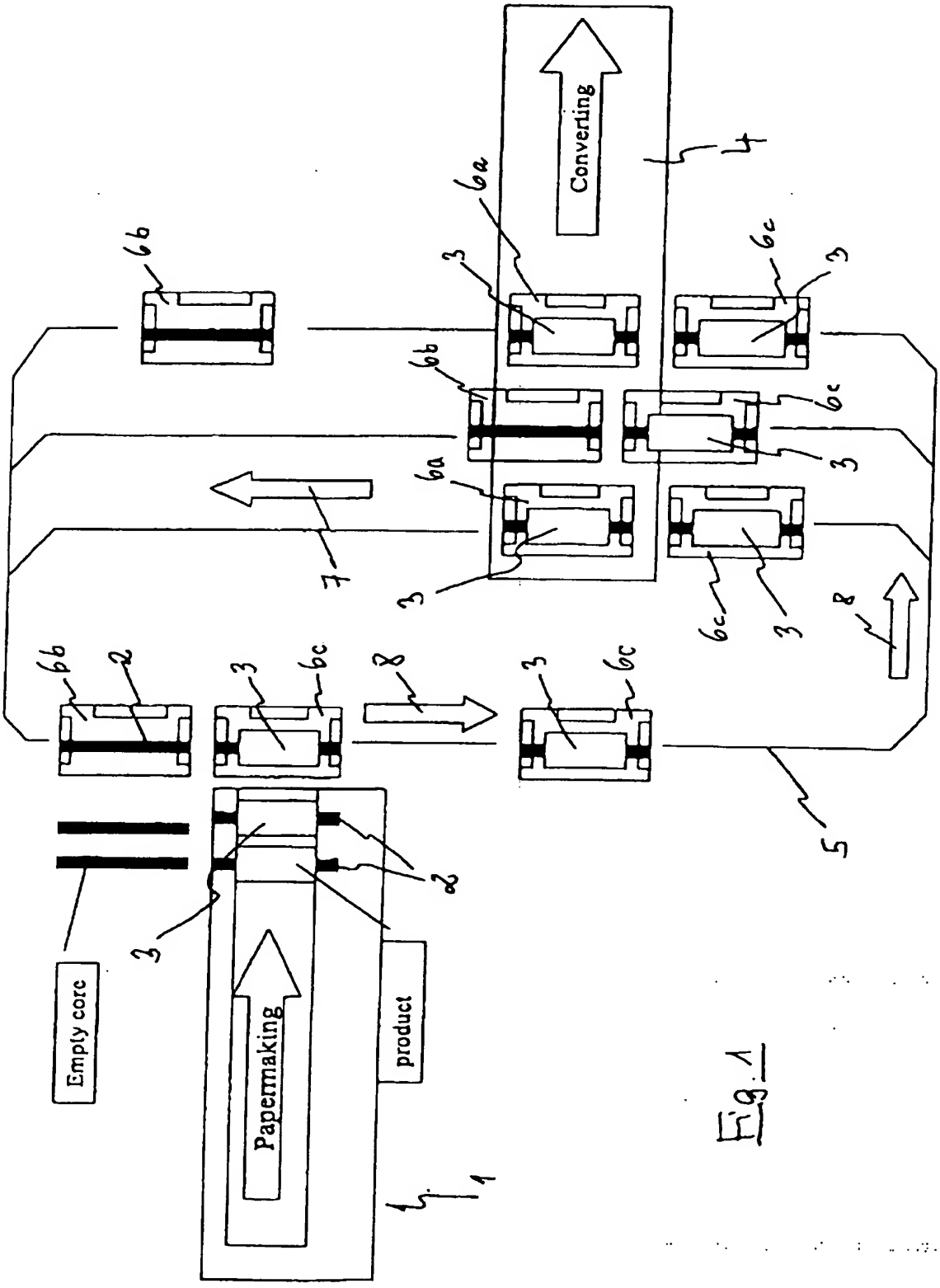

Fig. 1

Method and transportation device for transporting a product from a remote place to a converting machine

Technical Field

The technical field to which the invention relates is the field of transporting a product from a remote place to a converting machine. The product can be any product, which is further treated at a place remote from the place where the product is manufactured. In this context, "converting" means further handling or treatment of a product. In particular, the invention relates to paper as a product as manufactured on a paper making machine and being converted within a remote converting machine. In this respect, converting means e.g. rewinding for cutting, embossing, coating etc. for the production of paper products. The paper used for the products may be tissue paper, non-wovens or other paper.

Background Art

Usually, after a product has been manufactured, it is loaded onto a transporting device and transported from its place of manufacture to a converting machine where it is to be further treated. In the case of paper and tissue paper, the paper reel is taken from the paper making machine and loaded onto the transportation device by means of a crane. The transportation device then takes the paper reel to the converting machine where a crane is used to move the paper reel onto the unwinding mechanism of the converting machine. Once empty, the tambour rolls or winding sleeves are stored in the vicinity of the converting machine and then taken back to the paper making machine where they are treated for the next

production run. When using cranes to handle the paper reels, some paper damage occurs, especially when broad paper reels are used, i.e. 5.5m or more. Furthermore, the handling of the paper reels is complicated and cumbersome.

Disclosure of invention

It is the technical problem (object) of the invention to realise in a more effective, simple and efficient manner the transportation of a product from a remote place to a converting machine.

This problem is solved by a method for transporting a product from a remote place to a converting machine by using, as a transportation device, a part of the converting machine which is moved from the remote place into the converting machine at a location where this transportation device is in operation for the converting machine.

Furthermore, the problem is solved by a transportation device for transporting a product from a remote place to a converting machine, wherein the transportation device is a part of the converting machine, being detachable from the converting machine and being re-attachable into an operational position.

Finally, the problem is solved by a paper converting machine comprising an unwinding mechanism being detachable from the paper converting machine for transportation of paper reels from a remote paper making machine or storage to the paper converting machine, said paper converting machine comprising means for re-attaching the unwinding mechanism for operation within the paper converting machine.

Due to the fact that the transportation device is part of the converting machine, there is no need for a separate transportation device nor a crane for handling the product. Now that the product and in particular the paper is no longer

handled by fork lift trucks or cranes, there is no more product or paper damage and therefore less reject. Furthermore, there is less need for personnel due to the fact that the winding sleeves or tambour rolls in a paper converting machine do not require any special handling.

The movement of the transportation device is made within an automated guided vehicle system (AGV) using either a laser or a ground-inductive-system.

The remote place may be a storage for the product or a manufacturing machine for the product, especially a paper making machine or a storage for paper reels for use in a paper making machine.

The paper converting machine can be provided with a means for fixing the unwinding mechanism into its operational mode within the paper converting machine. Further, fine adjustments are possible when the paper reel is journalled such within the unwinding mechanism that the reel is axially adjustable (preferably within 10cm).

Brief description of drawings

Fig. 1 shows diagrammatically a transportation system between a paper making machine and a paper converting machine.

Preferred embodiment of the invention

A preferred embodiment of the invention is in the paper making field and, in particular, in the tissue paper making field, although other products could be handled in this manner as well. Figure 1 shows a paper making machine 1 at the output of which the paper is wound onto a core 2, which may be a so-called tambour roll or winding reel being re-used. The full paper reel 3 is ready at the output of the paper making machine 1 for transportation to a converting machine 4, which,

according to the illustration in Fig. 1, is a converting machine capable of handling the conversion of three paper webs simultaneously. Therefore, Fig. 1 shows three paper reels 3 within the converting machine 4. The term "converting machine" used in this invention also encompasses rewinding machines. In other words, it could be possible that an intermediate rewinding machine is positioned between the paper making machine 1 and the converting machine 4, in particular for cutting the paper reel from the paper making machine into paper reels of shorter width.

An automated guided vehicle system 5 is provided between the paper making machine 1 and the converting machine 4. This can be provided as a ground-inductive system or a laser system. An unwinding mechanism 6a, also operational within the converting machine 4, is provided for transporting the paper reels 3. When, for instance, the reel is empty, the transportation device (unwinding mechanism) 6b is moved in the direction of the arrow 7 to the paper making machine 1 in order to deliver the empty core 2 into a storage of the paper making machine and to pick up a new paper reel 3 from the paper making machine. Then, the transportation device (unwinding mechanism) 6c is moved in the direction of the arrows 8 to the converting machine 4 and into the operational position of the unwinding mechanism within the converting machine 4. In this position, the unwinding mechanism can be fixed and centralised for the unwinding operation. In this manner, the unwinding mechanism of the converting machine is used for transportation of the paper reels from the remote paper making machine.

The journalled core within the unwinding mechanism can be finely adjusted axially so that the paper reel is brought into the correct position for the unwinding operation.

Claims

1. Method for transporting a product from a remote place to a converting machine by using a part of the converting machine as a transportation device which is moved from the remote place into the converting machine at a location where this transportation device is in operation for the converting machine.

2. Method according to claim 1, wherein a guide system is used for moving the transportation device.

3. Method according to claim 2, wherein the guide system is a laser or ground-inductive-system.

4. Method according to claim 1, wherein the remote place is a manufacturing machine.

5. Method according to claim 4, wherein the transportation device is also a part of the manufacturing machine.

6. Method according to claim 1, wherein the remote place is a storage for the product.

7. Method according to claim 4, wherein the manufacturing machine is a paper making machine and the transportation device is the unwinding mechanism of the paper converting machine.

8. Transportation device for transporting a product from a remote place to a converting machine, wherein the transportation device is a part of the converting machine, being detachable from the converting machine and being re-attachable into the operational position.

9. Transportation device according to claim 8, wherein the transportation device is simultaneously the unwinding mechanism of a paper converting machine.

10. Paper converting machine comprising an unwinding mechanism being detachable from the paper converting machine for transportation of paper reels from a remote paper making machine or storage to the paper converting machine, said paper converting machine comprising means for re-attaching the unwinding mechanism for operation within the paper converting machine.

11. Paper converting machine according to claim 10, wherein means for fixing the unwinding mechanism in the operational position within the paper converting machine is provided.

12. Paper converting machine according to claim 10, wherein the paper reel is journalled such within the unwinding mechanism that the reel is axially adjustable.

INVESTOR IN PEOPLE

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Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.T): B8R (RRA8, RRC)

Int Cl (Ed.7): B65H

Other: Online: WPI, EPODOC

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
	NONE	1, 8, 10

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Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
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